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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,260	04/10/2001	Hans-Jurgen Hacke	GR 00 P 1708	2776
24131	7590	12/21/2004	EXAMINER	
LERNER AND GREENBERG, PA P O BOX 2480 HOLLYWOOD, FL 33022-2480			PAREKH, NITIN	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,260

Applicant(s)

HACKE, HANS-JURGEN

Examiner

Nitin Parekh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2004.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 52,54-56,58-61,63-71 and 78-107 is/are pending in the application.
4a) Of the above claim(s) 72-104 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 105-107 is/are rejected.
7) ☒ Claim(s) 52,54-56,58-61 and 63-71 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 10 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 26.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/22/04 has been entered. An action on the RCE follows.
2. The amendment filed on 09/27/2004 has been entered.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims.

A. The claim limitations as recited in claim 60, line 5: "an intermediate carrier".

Therefore, the intermediate carrier must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 52 is objected to because of the following informalities:
 - A. The limitations as recited in claim 52, line 13, "a direction" should read "directions".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. Claim 105 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- A. The claim limitations as recited in claim 105, lines 9 and 21 include: "said contact area having a shortest linear dimension" and "said shortest linear dimension of said contact area" respectively.

It is not clear from the specification what value of the linear dimension is considered to be the shortest for the microscopically small contact area.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 105-107, insofar as being in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanof et al. (US Pat. 5476818) in view of Khandros et al. (US Pat. 5917707).

Regarding claims 105 and 106, Yanof et al. disclose an electronic device package (Fig.

1-3) having a contact structure, the device/package comprising:

- a substrate (40/11 in Fig. 3) having top and bottom surfaces (12 and 13 respectively in Fig. 3)
- the substrate comprising conventional electronic circuit interconnects, pads, contacts, ground/signal planes, etc. on the top and bottom surfaces and interconnecting vias (Col. 2, lines 40-60)
- the circuit interconnect including a plurality of contact areas/pads (19 in Fig. 3; Col. 2, line 52)
- the contact area including microscopically small conductive probe/contact element (CP/CE-22/36/35 in Fig. 3) having microscopically small size/dimensions (Col. 5, lines 50-55), and
- the CP/CE having a base (22 in Fig. 3) and a substantially straight part integrally formed at an oblique angle with the base (see 35/36 with respect to 22 in Fig. 3; Col. 5, lines 50-52), the straight part extending from the contact area in three dimensions deviating from orthogonal and parallel directions from the top surface and the electronic circuit interconnect areas/pads and being angularly disposed obliquely relative to the top surface of the substrate in an unstressed condition (Col. 4, lines 25-27; Col. 5, lines 50-52)

(Fig. 3 and 1-7; Col. 2, line 20- Col. 6, line 63).

Yanof et al. fail to teach:

- a) the contact area being microscopically small
- b) the substrate being one of a semiconductor wafer and a chip, and
- c) the CE being configured as a contact pin having a diameter which is no greater than half of a shortest linear dimension of the contact area.

Khandros et al. teach an electronic device/package having a contact structure comprising a substrate including microscopically small contact areas and contact elements (103 and 122 in Fig. 2) where the contact areas have small/microscopic dimensions ranging 2-50 mils (Col. 4, line 40).

Khandros et al. further teach:

- o the substrate of the contact structure comprising a variety of substrates/components including a plastic package, ceramic or silicon package having active/passive semiconductor device/electronic chip (103 in Fig. 2) having an integrated circuit on/near the surface of the substrate (Col. 4, lines 13-36), and
- o the contact structure being such that the CE can be designed/configured as a contact pin or pin-shaped configuration having a base and an extended part having a predetermined diameter (107/106 in Fig. 1; Col. 4, line 54), and

- the contact area having a dimension/shortest linear dimension of about 2.0 mils (Col. 4, line 40) and the diameter of the pin being 0.25 mils (Col. 4, line 53) such that the diameter of the pin is no greater than half of the shortest linear dimension of the contact area.

It would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate the elements a)-c) as taught by Khandros et al. so that the desired contact resistance can be achieved, electrical shorting can be prevented and reliability of the interconnection can be improved in Khandros et al. and Yanof et al 's device. .

Regarding claim 107, Yanof et al. and Khandros et al. teach substantially the entire claimed structure as applied to claim 105 above, except the part extending from the base has a free end opposite the base and is configured for detachably receiving a test head.

Khandros et al. teach the extended part of the pin contact being adapted for a variety of flexible, resilient and detachably receivable/removable configurations for test and burn-in applications (Fig. 1-38; Col. 4-23).

It would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate the part extending from the base has a free end

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opposite the base and is configured for detachably receiving a test head as taught by Khandros et al. so that the connection flexibility can be improved and the desired test/repair requirements can be achieved in Khandros et al. and Yanof et al.'s device.

Allowable Subject Matter

8. Claims 52, 54-56 and 58-71 but would be allowable if rewritten to overcome the objections set forth above.

Reasons for Allowance

9. The following is an examiner's statement of reasons for allowance:

The references of record do not teach either singularly or in combination at least the limitations "an electronic circuit having interconnects formed on said surface of said substrate; said electronic circuit including at least one microscopically small contact area", "said contact area including a microscopically small element disposed thereon having a base and a substantially straight part integrally connected in one-piece with and at an oblique angle with said base and extending from said contact area in three dimensions in directions deviating from a direction orthogonal to said surface of said substrate and parallel to said electronic circuit on said substrate" and "said part extending from said contact area being preformed and angularly disposed obliquely relative to said surface of said substrate in an unstressed condition" in a device on a chip or a wafer.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number is 571-272-1663. The examiner can normally be reached on 09:00AM-05:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956

NP

12-17-04



NITIN PAREKH

PRIMARY EXAMINER

TECHNOLOGY CENTER 2800